

National Aeronautics and Space Administration
Goddard Space Flight Center
Contract No. NAS-5-12487

Ragurny U.S.S.R
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11/2/66

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PRELIMINARY RESULTS OF INVESTIGATION
OF SOLID INTERPLANETARY MATTER
IN THE VICINITY OF THE MOON

by

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(USSR)

FACILE FORM 602	N 67. 1.1 1.1.01	
	(ACCESSION NUMBER)	(THRU)
	5	1
	(PAGES)	(CODE)
	OK-79831	30
	(NASA CR OR TMX OR AD NUMBER)	(CATEGORY)

GPO PRICE \$ _____

CFSTI PRICE(S) \$ _____

Hard copy (HC) 1.00

Microfiche (MF) 1.50

28 OCTOBER 1966.

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IN THE VICINITY OF THE MOON

① Doklady A. N. SSSR,
 Geofizika,
 Tom 170, No. 3, 578-9,
 Izdatel'stvo "NAUKA", 1966

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SUMMARY

On the basis of a hypothesis brought forth that the increased density of the matter in the vicinity of the Moon may be explained by the fact that the Moon itself is their source, the authors conclude that the instrumentation aboard LUNA-10 must register particles of lunar origin, as well as the meteoric particles, of which the number is small. The conclusion is derived also that the density of the matter in the vicinity of the Moon differs from the average for the interplanetary space by more than 4 orders.

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Author

The investigation of meteor matter on the AMS "LUNA 10" was carried out with the help of piezoelectric sensors sewn on the lining of the probe, and sensitive to meteor particle impacts with masses of $7 \cdot 10^{-8}$ g and more for a particle velocity of 15 km/sec. The surface sensitive to impacts constituted 1.2 m^2 .

Between 3 April and 12 May 1966, 198 particle impacts were registered for the time of 11 hours and 50 minutes, which constitutes $4 \cdot 10^{-3}$ impacts per 1 m^2 per second, and exceeds by 2 orders the average for interplanetary space.

It is well known that in interplanetary space meteor particles are mostly agglomerated in separate clusters of which the extension varies within broad limits; the spatial density of particles in them is irregular and may exceed by 1-2 orders the average value. However, the registration of increased density of particles in the vicinity of the Moon for as prolonged a time as that of LUNA-10 experiment, provides the basis to assume that this condensation has a local character and is related to the Moon.

* PREDVARITEL'NYYE RESUL'TATY ISSLEDOVANIYA TVERDOGO MEZHLANETNOGO VESHCHESTVA V OKRESNOSTI LUNY.

In this case, for most of particles the value of velocity must not be assumed to be 15 km/sec, as is done by us for sporadic meteor particles in the near-Earth space, but within the 1-3 km/sec range mentioned above. Since, as previously, we utilized during the interpretation of data the dependence $I \sim E$, where I is the pulse registered by the sensor, and E is the energy of the particle, in this case the value of the limit registered mass of the particle increases to $\sim 10^{-6}$ g, and the spatial density of dust matter in the vicinity of the Moon will differ from the average for interplanetary space already by more than 4 orders.

The authors are grateful to academician A. P. Vinogradov for his valuable indications during the preparation of the experiment and the interpretation of the results. Their thanks go also to M. L. Lidov and E. I. Andriankin for their participation in the discussion and interpretation of the data, and to E. V. Vasyukova, for her participation in the processing of data.

***** THE END *****

Institute of Geochemistry and
Analytical Chemistry in the name
of V. I. Vernadskiy of the USSR
Academy of Sciences

Received on
28 June 1966

Contract No. NAS-5-12487
VOLT TECHNICAL CORPORATION
1145 19th st. NW
Washington, D. C. 20036
Tel: 223-6700

Translated by ANDRE L. BRICHANT
on 27 October 1966

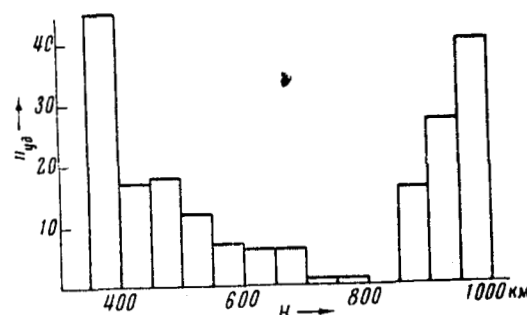


Fig. 2. Distribution in height of registered particle impacts

D I S T R I B U T I O NGODDARD SPACE F.C.

100 CLARK TOWNSEND
 110 STROUD
 400 BOURDEAU
 601 FAVA
 610 MEREDITH
 SEDDON
 611 McDONALD
 ABRAHAM DAVIS
 EVANS-WILLIAMSON
 WILLIAMS
 KONRADI HOFFMAN
 BOLDT HAGGE
 VKB
 KNIFFEN TEEGARDEN
 FICHTEL SERLEMITOS
 612 HEPPNER
 NESS
 613 KUPPERIAN
 BOGGESS
 McCRACKEN
 HALLAM KONDO
 DUNKELMAN
 FOWLER
 64 WHITE
 FROST
 WOLFF
 KASTNER
 615 BAUER
 AIKIN
 GOLDBERG
 HERMAN
 MAIER
 STONE
 CHANDRA
 620 SPENCER
 621 TAYLOR
 630 GI for SS (3)
 640 HESS
 O'KEEFE
 641 CAMERON
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